

### REMARKS

This is a full and timely response to the final Office Action of 12 November 2004. Reconsideration of the application in light of the following remarks is respectfully requested.

Claims 8-21, 24, 46 and 47 were withdrawn from consideration under a previous restriction requirement. Thus, claims 1-7, 22, 23, 25-45 and 48-56 are currently pending for the Examiner's consideration.

In the recent final Office Action, claims 29, 30, 35, 37-45 and 54 were allowed. Claims 36, 48-53, 55 and 56 were allowed previously. Thus, claims 29, 30, 35-45 and 48-56 now stand allowed. Applicant wishes to thank the Examiner for the allowance of these claims.

Applicant agrees with the determination that these claims are patentable without necessarily agreeing or acquiescing in any stated reasons for allowance. Applicant believes that these claims are allowable because the prior art fails to teach, anticipate or render obvious the invention as claimed, independent of how the claims are paraphrased.

With regard to the prior art, claims 1-5 and 22 have been rejected under 35 U.S.C. § 103(a) as unpatentable in view of the combined teachings of U.S. Patent No. 5,303,141 to Batchelder, et al. ("Batchelder") and U.S. No. 5,980,812 to Lawton ("Lawton"). Claims 6, 7 and 23 have been rejected under § 103 in view of the combined teachings of Batchelder, Lawton and U.S. Patent No. 6,214,276 to Gelbart ("Gelbart"). For at least the following reasons, these rejections are respectfully traversed.

Claim 1 recites

A method for fabricating an article using photo-activatable building material, comprising the steps of:

depositing a uniform layer of the photo-activatable building material;  
scanning the layer using a plurality of light-emitting centers, wherein the light-emitting centers are moved over the layer and selectively activated to selectively photo-activate the layer of photo-activatable building material in accordance with fabrication of said article; and

repeating the steps of depositing a uniform layer, with each layer being applied over an immediately previous layer, and scanning the layer with the plurality of light-emitting centers to selectively photo-activate the building material until the article is fabricated.

According to the final Office Action, Batchelder teaches all the features of claim 1 except “depositing uniform layers of building material.” (Action of 11/12/04, p. 4). *This is incorrect.* First, claim 1 does not merely recite depositing a uniform layer of building material. Claim 1 recites depositing a uniform layer of “*photo-activatable*” building material. In contrast, Batchelder does not teach or suggest photo-activatable building material. Rather, the material used by Batchelder is heat-activated or “thermoset” material that is cured by being heated, not by exposure to light. (See, Batchelder, col. 7, lines 15-20). Consequently, Batchelder also does not, and could not, teach or suggest light-emitting centers that are “selectively activated to selectively photo-activate the layer of photo-activatable building material.” In the Batchelder system, all extruded (deposited) material is heated and cured in the shape it was extruded. There is no selective activation or curing of the building material in Batchelder. Thus, Batchelder is much less relevant to claim 1 than was appreciated in the final Office Action.

Without understanding these major differences between claim 1 and Batchelder, the final Office Action goes on to allege that Lawton teaches the claimed uniform layer of building material which could be used in the system taught by Batchelder. (Action of

11/12/04, p. 4). *However, the final Office Action has failed to indicate how Batchelder could be modified to deposit "a uniform layer of the photo-activatable building material" as claimed.* The Office is required to provide such an explanation. *See* M.P.E.P. § 706.02(j). In reality, the Batchelder and Latwon systems are entirely incompatible and one of skill in the art would never have considered combining them as proposed by the final Office Action.

Lawton creates a uniform layer of building material using a liquid bath of photo-activatable build material (106). A platform (102) moves through the bath to support the object being formed. The bath taught by Lawton *cannot* be used by Batchelder because Batchelder does not teach or suggest selective activation of the building material. Batchelder simply cures all extruded (deposited) building material and would therefore simply heat and solidify a bath of build material as taught by Lawton.

Again, the final Office Action has failed to indicate how Batchelder could be modified to deposit "a uniform layer of the photo-activatable building material" as claimed.

Consequently, combining Batchelder and Lawton as proposed by the final Action would appear to result in a useless device. "If the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984)." M.P.E.P. § 2143.01. "Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art." M.P.E.P. § 2143.01 (citations omitted).

According to the Office Action, the test for obviousness does not rest on whether the features of the secondary reference can be bodily incorporated into the structure of the

primary reference. (Action of 11/12/04, p. 8). However, the combination still has to make sense such that it would have been obvious to one of skill in the art. To support the final Office Action, the Office must explain how and why Batchelder could be modified (1) to use photo-activatable building material instead of thermoset material, (2) to selectively activate the building material and (3) to deposit successive uniform layers of building material. Moreover, the Office must explain why such modifications would have been obvious in view of Lawton.

Until such a showing is made, no *prima facie* case of unpatentability has been made. Therefore, the rejection of claims 1-7 should not be sustained.

Claim 22 recites:

A method for fabricating an article using photo-activatable building material wherein light-emitting diode polymerization is utilized, comprising the steps of:  
laying down a uniform layer of photo-activated polymer with a thickness suitable for selective photo-activation;  
polymerizing a cross section of the article by selectively exposing the layer of photo-activated polymer to light;  
raising an applicator used to lay down said layer of photo-activated polymer;  
and  
repeating laying down layers and polymerizing a cross section of the article in each layer until the article is fabricated.

In contrast, neither Batchelder nor Lawton teach or suggest the combination of “laying down a uniform layer photo-activated polymer” and then “raising an applicator used to lay down said layer of photo-activated polymer” as claimed.

As demonstrated above, Batchelder is entirely inapposite to claim 22. Batchelder does not teach or suggest laying down a uniform layer of photo-activated polymer. Batchelder does not teach or suggest selectively exposing a layer of polymer material to light. Batchelder

does not teach or suggest raising an applicator after laying down said uniform layer of polymer.

Similarly, Lawton does not teach or suggest laying down a uniform layer of photo-activated polymer with an applicator. Lawton teaches a bath (106) of liquid material through which a platform (102) moves to selectively position a layer of the liquid material over the platform. Thus, Lawton further does not teach or suggest raising an applicator used to lay down the uniform layer of material.

Since neither reference teaches the claimed subject matter, the combined teachings of Batchelder and Lawton fail to teach or suggest “laying down a uniform layer photo-activated polymer” with an applicator and “raising [the] applicator used to lay down said layer of photo-activated polymer” as claimed in claim 22. “To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974).” M.P.E.P. § 2143.03. Accord. M.P.E.P. § 706.02(j). Therefore, the rejection of claims 22, 23 and 25 should be reconsidered and withdrawn.

Claims 25-28 and 31-34 were rejected as unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Batchelder, Lawton, Gelbart, U.S. Patent No. 5,764,263 to Lin “Lin” and U.S. Patent No. 4,029,006 to Mercer “Mercer.” For at least the following reasons, this rejection is respectfully traversed.

Claim 26 recites:

A method for fabricating an article using photo-activatable building material, the method comprising:

depositing a uniform layer of the photo-activatable building material to a preselected surface with an applicator;

scanning the layer using a plurality of light-emitting centers to selectively photo-activate the layer of photo-activatable building material in accordance with fabrication of said article;

repeating the steps of depositing a uniform layer, with each layer being applied over an immediately previous layer, and scanning each layer with the plurality of light-emitting centers to selectively photo-activate the building material until the article is fabricated;

curing the article in a curing oven following fabrication; and

automatically transporting the article between said applicator and said curing oven with a transport system.

(emphasis added).

Similarly, claim 34 recites:

A method for fabricating an article using photo-activatable building material, the method comprising:

depositing a uniform layer of the photo-activatable building material to a preselected surface with an applicator;

scanning the layer using a plurality of light-emitting centers to selectively photo-activate the layer of photo-activatable building material in accordance with fabrication of said article;

repeating the steps of depositing a uniform layer, with each layer being applied over an immediately previous layer, and scanning each layer with the plurality of light-emitting centers to selectively photo-activate the building material until the article is fabricated;

rinsing the article in a rinsing unit following fabrication; and

automatically transporting the article between said applicator and said rinsing unit with a transport system.

(emphasis added).

As demonstrated above, Batchelder and Lawton are incompatible and would not have been combined by one of skill in the art. Moreover, while Batchelder teaches the possibility of multiple nozzles with a heating light for heating extruded thermoset material, Batchelder does not teach or suggest a plurality of light-emitting centers that are scanned over a layer of building material to selective photo-activate the layer. In fact, Batchelder teaches away from such a device. Similarly, Lawton does not teach or suggest a plurality of light-emitting centers scanned over a layer of building material to selectively activated that material.

The final Office Action does not allege or suggest that Gelbart, Lin or Mercer teach or suggest the claimed scanning with a plurality of light-emitting centers. Therefore, the cited combination of prior art fails to teach or suggest at least the "scanning" element of claims 26 and 34. Therefore, the rejection of claims 26-34 should be reconsidered and withdrawn.

For the foregoing reasons, the present application is thought to be clearly in condition for allowance. Accordingly, favorable reconsideration of the application in light of these remarks is courteously solicited. If the Examiner has any comments or suggestions which could place this application in even better form, the Examiner is requested to telephone the undersigned attorney at the number listed below.

Respectfully submitted,



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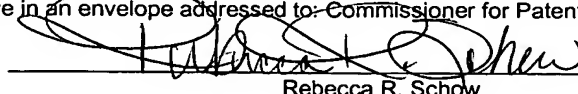
DATE: 7 January 2005

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DATE OF DEPOSIT: January 7, 2005

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